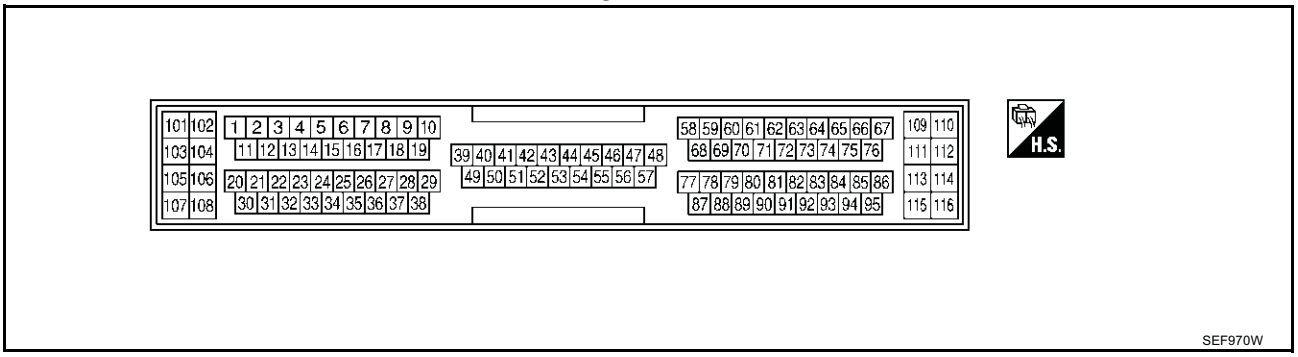
ECM Harness Connector Terminal Layout

ABS00042

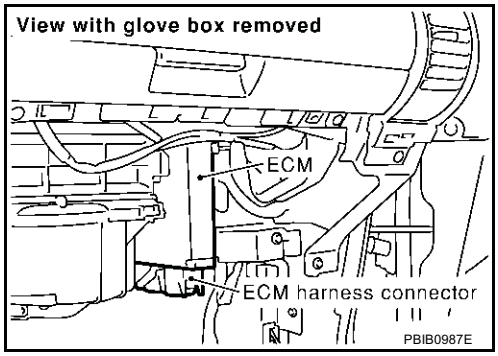


ECM Terminals and Reference Value

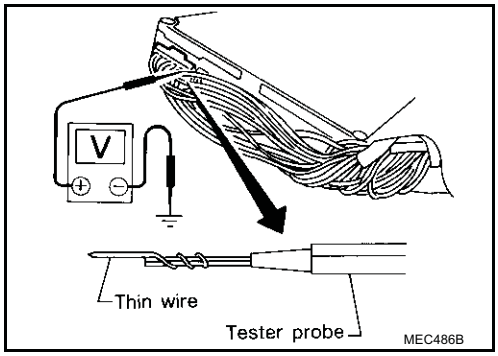
ABS00043

PREPARATION

1. ECM is located behind the glove box. For this inspection, remove glove box.
2. Remove ECM harness protector.



3. Perform all voltage measurements with the connector connected. Extend tester probe as shown to perform tests easily.
   - Open harness securing clip to make testing easier.
   - Use extreme care not to touch 2 pins at one time.
   - Data is for comparison and may not be exact.

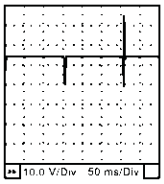
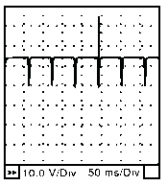
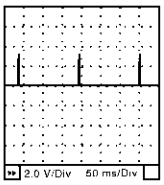
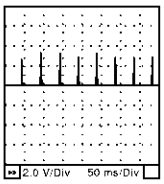
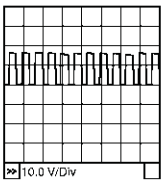


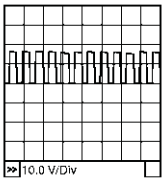
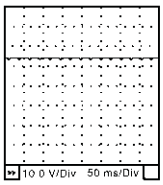
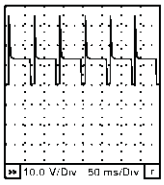
ECM INSPECTION TABLE

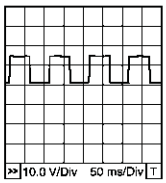
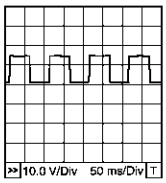
Specification data are reference values and are measured between each terminal and ground.
Pulse signal is measured by CONSULT-II.

CAUTION:

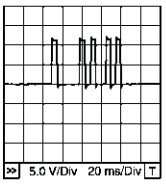
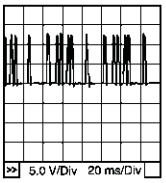
Do not use ECM ground terminals when measuring input/output voltage. Doing so may result in damage to the ECMs transistor. Use a ground other than ECM terminals, such as the ground.

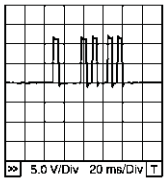
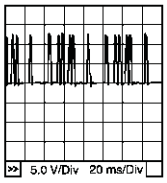
TER-MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
1 2 3 11 12 13	R/B R/W R/Y R/L W P	Injector No. 1 Injector No. 2 Injector No. 3 Injector No. 4 Injector No. 5 Injector No. 6	**[Engine is running]** ● **Warm-up condition** ● Idle speed	BATTERY VOLTAGE (11 - 14V)★  SEC984C
			[Engine is running] ● **Warm-up condition** ● Engine speed is 2,000 rpm.	BATTERY VOLTAGE (11 - 14V)★  SEC985C
5 6 7 15 16 17	Y/R G/R L/R GY PU/W GY/R	Ignition signal No. 1 Ignition signal No. 2 Ignition signal No. 3 Ignition signal No. 4 Ignition signal No. 5 Ignition signal No. 6	**[Engine is running]** ● **Warm-up condition** ● Idle speed	0 - 0.2V★  SEC986C
			[Engine is running] ● **Warm-up condition** ● Engine speed is 2,500 rpm.	0.1 - 0.3V★  SEC987C
8	W/G	Intake valve timing control solenoid valve (bank 2)	**[Engine is running]** ● **Warm-up condition** ● Idle speed	BATTERY VOLTAGE (11 - 14V)
			[Engine is running] ● **Warm-up condition** ● When revving engine up to 2,000 rpm quickly	7 - 12V★  PBIB1790E

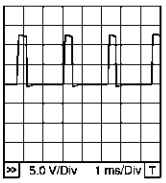
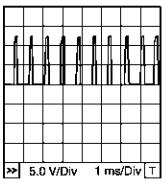
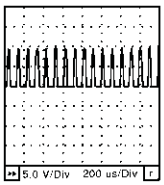
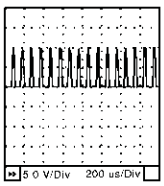
TERMINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
9	W/R	Intake valve timing control solenoid valve (bank 1)	**[Engine is running]** ● **Warm-up condition** ● Idle speed	BATTERY VOLTAGE (11 - 14V)
			[Engine is running] ● **Warm-up condition** ● When revving engine up to 2,000 rpm quickly	7 - 12V★  PBIB1790E
10	L/Y	EVAP canister purge volume control solenoid valve	**[Engine is running]** ● Idle speed	BATTERY VOLTAGE (11 - 14V)★  SEC990C
			[Engine is running] ● Engine speed is about 2,000 rpm (More than 100 seconds after starting engine).	BATTERY VOLTAGE (11 - 14V)★  SEC991C
23	B/OR	Fuel pump relay	**[Ignition switch "ON"]** ● For 1 second after turning ignition switch "ON" **[Engine is running]**	0 - 1.5V
			[Ignition switch "ON"] ● More than 1 second after turning ignition switch "ON".	BATTERY VOLTAGE (11 - 14V)
26	G	Throttle control motor relay	**[Ignition switch "OFF"]**	BATTERY VOLTAGE (11 - 14V)
			[Ignition switch "ON"]	0 - 1.0V
31	W/L	Counter current return	**[Ignition switch "ON"]**	BATTERY VOLTAGE (11 - 14V)
33	R/B	MIL	**[Ignition switch "ON"]**	0 - 1.0V
			[Engine is running] ● Idle speed	BATTERY VOLTAGE (11 - 14V)
38	W/B	ECM relay (Self shut-off)	**[Engine is running]** **[Ignition switch "OFF"]** ● For a few seconds after turning ignition switch "OFF"	0 - 1.5V
			[Ignition switch "OFF"] ● A few seconds passed after turning ignition switch "OFF"	BATTERY VOLTAGE (11 - 14V)

TER-MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
39	L	Heated oxygen sensor 1 heater (bank 1)	**[Engine is running]** ● **Warm-up condition** ● Engine speed is below 3,600 rpm.	Approximately 7V★  PBIB0519E
			[Engine is running] ● Engine speed is above 3,600 rpm.	BATTERY VOLTAGE (11 - 14V)
40	Y	Heated oxygen sensor 1 heater (bank 2)	**[Engine is running]** ● **Warm-up condition** ● Engine speed is below 3,600 rpm.	Approximately 7V★  PBIB0519E
			[Engine is running] ● Engine speed is above 3,600 rpm.	BATTERY VOLTAGE (11 - 14V)
41	P/B	Heated oxygen sensor 2 heater (bank 1)	**[Engine is running]** ● Engine speed is below 3,600 rpm after the following conditions are met. – Engine: after warming up – Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load.	0 - 1.0V
			[Ignition switch “ON”] ● Engine stopped **[Engine is running]** ● Engine speed is above 3,600 rpm.	BATTERY VOLTAGE (11 - 14V)
42	SB	Start signal	**[Ignition switch “ON”]**	Approximately 0V
			[Ignition switch “START”]	9 - 12V
43	W/L	Ignition switch	**[Ignition switch “OFF”]**	0V
			[Ignition switch “ON”]	BATTERY VOLTAGE (11 - 14V)
44	G/OR	PNP switch	**[Ignition switch “ON”]** ● Gear position is “P” or “N”.	Approximately 0V
			[Ignition switch “ON”] ● Except the above gear position	BATTERY VOLTAGE (11 - 14V)

TERMINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
47	R/L	Heated oxygen sensor 2 heater (bank 2)	**[Engine is running]** ● Engine speed is below 3,600 rpm after the following conditions are met. – Engine: after warming up – Keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load.	0 - 1.0V
			[Ignition switch "ON"] ● Engine stopped **[Engine is running]** ● Engine speed is above 3,600 rpm.	BATTERY VOLTAGE (11 - 14V)
48 57	B B	ECM ground	**[Engine is running]** ● Idle speed	Engine ground
50	G/Y	ASCD steering switch	**[Ignition switch "ON"]** ● ASCD steering switch is released.	Approximately 4.0V
			[Ignition switch "ON"] ● CRUISE switch is pressed.	Approximately 0V
			[Ignition switch "ON"] ● CANCEL switch is pressed.	Approximately 1V
			[Ignition switch "ON"] ● COAST/SET switch is pressed.	Approximately 2V
			[Ignition switch "ON"] ● ACCEL/RESUME switch is pressed.	Approximately 3V
55	P/L	Stop lamp switch	**[Ignition switch "ON"]** ● Brake pedal is fully released	Approximately 0V
			[Ignition switch "ON"] ● Brake pedal is depressed	BATTERY VOLTAGE (11 - 14V)
58	B/W	Sensors' ground	**[Engine is running]** ● **Warm-up condition** ● Idle speed	Approximately 0V
59	SB	ASCD brake switch	**[Ignition switch "ON"]** ● Brake pedal is depressed	Approximately 0V
			[Ignition switch "ON"] ● Brake pedal is fully released	BATTERY VOLTAGE (11 - 14V)
60	L/R	EVAP control system pressure sensor	**[Ignition switch "ON"]**	Approximately 1.8 - 4.8V
62	LG	Mass air flow sensor	**[Engine is running]** ● **Warm-up condition** ● Idle speed	1.1 - 1.5V
			[Engine is running] ● **Warm-up condition** ● Engine speed is 2,500 rpm.	1.7 - 2.4V
64	G	Accelerator pedal position sensor 2 power supply	**[Ignition switch "ON"]**	Approximately 2.5V

TER-MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
65 76	G/W G/W	Camshaft position sensor (PHASE) (bank 1)	**[Engine is running]** ● **Warm-up condition** ● Idle speed	1.0 - 4.0V★  PBIB1039E
			[Engine is running] ● Engine speed is 2,000 rpm.	1.0 - 4.0V★  PBIB1040E
66	Y/G	Intake air temperature sensor	**[Engine is running]**	Approximately 0 - 4.8V Output voltage varies with intake air temperature.
67	R/W	Power supply for ECM (Buck-up)	**[Ignition switch "OFF"]**	BATTERY VOLTAGE (11 - 14V)
69	W/B	Fuel level sensor	**[Ignition switch "ON"]**	Approximately 0 - 4.8V Output voltage varies with fuel level.
70	B/R	Accelerator pedal position sensor 2 ground	**[Ignition switch "ON"]**	Approximately 0V
71	W	Knock sensor	**[Engine is running]** ● Idle speed	Approximately 2.5V
73	BR	Accelerator pedal position sensor 1	**[Ignition switch "ON"]** ● Engine stopped ● Accelerator pedal fully released	0.41 - 0.72V
			[Ignition switch "ON"] ● Engine stopped ● Accelerator pedal fully depressed	More than 3.2V
74	LG/B	Accelerator pedal position sensor 2	**[Ignition switch "ON"]** ● Engine stopped ● Accelerator pedal fully released	0.07 - 0.49V
			[Ignition switch "ON"] ● Engine stopped ● Accelerator pedal fully depressed	More than 1.49V
75	PU/W	Fuel tank temperature sensor	**[Engine is running]**	Approximately 0 - 4.8V Output voltage varies with fuel tank temperature.
78	B	Fuel level sensor ground	**[Engine is running]** ● Idle speed	Approximately 0V
80	B/Y	Mass air flow sensor ground	**[Engine is running]** ● **Warm-up condition** ● Idle speed	Approximately 0V

TER-MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
81	OR	Refrigerant pressure sensor	**[Engine is running]** ● **Warm-up condition** ● Both A/C switch and blower switch are “ON”. (Compressor operates.)	1.0 - 4.0V
83	W	Throttle position sensor 1	**[Ignition switch “ON”]** ● Engine stopped ● Gear position: “D” ● Accelerator pedal fully released	More than 0.36V
			[Ignition switch “ON”] ● Engine stopped ● Gear position: “D” ● Accelerator pedal fully depressed	Less than 4.75V
84	G	Throttle position sensor 2	**[Ignition switch “ON”]** ● Engine stopped ● Gear position: “D” ● Accelerator pedal fully released	Less than 4.75V
			[Ignition switch “ON”] ● Engine stopped ● Gear position: “D” ● Accelerator pedal fully depressed	More than 0.36V
85 94	Y Y	Camshaft position sensor (PHASE) (bank 2)	**[Engine is running]** ● **Warm-up condition** ● Idle speed	1.0 - 4.0V★  PBIB1039E
			[Engine is running] ● Engine speed is 2,000 rpm.	1.0 - 4.0V★  PBIB1040E
88	W/R	Heated oxygen sensor 2 (bank 1)	**[Engine is running]** ● **Warm-up condition** ● Revving engine from idle to 3,000 rpm quickly after the following conditions are met. – After keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load.	0 - Approximately 1.0V
89	W/G	Power steering pressure sensor	**[Engine is running]** ● Steering wheel is being turned.	0.5 - 4.5V
			[Engine is running] ● Steering wheel is not being turned.	0.4 - 0.8V

TER-MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
90	G/R	Heated oxygen sensor 2 (bank 2)	**[Engine is running]** ● **Warm-up condition** ● Revving engine from idle to 3,000 rpm quickly after the following conditions are met. – After keeping the engine speed between 3,500 and 4,000 rpm for 1 minute and at idle for 1 minute under no load.	0 - Approximately 1.0V
91	L/W	Heated oxygen sensor 1 (bank 1)	**[Engine is running]** ● **Warm-up condition** ● Engine speed is 2,000 rpm.	0 - Approximately 1.0V (Periodically change)
92	GY	Heated oxygen sensor 1 (bank 2)	**[Engine is running]** ● **Warm-up condition** ● Engine speed is 2,000 rpm.	0 - Approximately 1.0V (Periodically change)
93	Y/B	Engine coolant temperature sensor	**[Engine is running]**	Approximately 0 - 4.8V Output voltage varies with engine coolant temperature.
95	BR	Crankshaft position sensor (POS)	**[Engine is running]** ● **Warm-up condition** ● Idle speed	Approximately 1.6V★  PBIB1041E
			[Engine is running] ● Engine speed is 2,000 rpm.	Approximately 1.5V★  PBIB1042E
101	Y	Throttle control motor (Open)	**[Ignition switch “ON”]** ● Engine stopped ● Shift lever: “D” ● Accelerator pedal is depressing	0 - 14V★  SEC037D
102	W/R	Throttle control motor relay power supply	**[Ignition switch “ON”]**	BATTERY VOLTAGE (11 - 14V)
103	BR	Throttle control motor (Close)	**[Ignition switch “ON”]** ● Engine stopped ● Shift lever: “D” ● Accelerator pedal is releasing	0 - 14V★  SEC038D
105	GY/L	EVAP canister vent control valve	**[Ignition switch “ON”]**	BATTERY VOLTAGE (11 - 14V)

TER-MINAL NO.	WIRE COLOR	ITEM	CONDITION	DATA (DC Voltage)
106 108	B B	ECM ground	**[Engine is running]** ● Idle speed	Engine ground
107	B	Throttle control motor ground	**[Ignition switch "ON"]**	Approximately 0V
109	L	CAN communication line	**[Ignition switch "ON"]**	Approximately 2.6 - 3.2V Output voltage varies with the communication status.
110 112	P P	Power supply for ECM	**[Ignition switch "ON"]**	BATTERY VOLTAGE (11 - 14V)
111	L	Sensors' power supply	**[Ignition switch "ON"]**	Approximately 5V
113	R	CAN communication line	**[Ignition switch "ON"]**	Approximately 1.7 - 2.3V Output voltage varies with the communication status.
115	PU	Data link connector	**[Ignition switch "ON"]** ● CONSULT-II or GST is disconnected.	Approximately 5V

★: Average voltage for pulse signal (Actual pulse signal can be confirmed by oscilloscope.)

CONSULT-II Function

ABS00044

FUNCTION

Diagnostic test mode	Function
Work support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on the CONSULT-II unit.
Self-diagnostic results	Self-diagnostic results such as 1st trip DTC, DTCs and 1st trip freeze frame data or freeze frame data can be read and erased quickly.*
Data monitor	Input/Output data in the ECM can be read.
Data monitor (SPEC)	Input/Output of the specification for Basic fuel schedule, AFM, A/F feedback control value and the other data monitor items can be read.
CAN diagnostic support monitor	The results of transmit/receive diagnosis of CAN communication can be read.
Active test	Diagnostic Test Mode in which CONSULT-II drives some actuators apart from the ECMs and also shifts some parameters in a specified range.
DTC & SRT confirmation	The status of system monitoring tests and the self-diagnosis status/result can be confirmed.
Function test	This mode is used to inform customers when their vehicle condition requires periodic maintenance.
ECM part number	ECM part number can be read.

*: The following emission-related diagnostic information is cleared when the ECM memory is erased.

- Diagnostic trouble codes
- 1st trip diagnostic trouble codes
- Freeze frame data
- 1st trip freeze frame data
- System readiness test (SRT) codes
- Test values
- Others